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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,297	05/15/2001	Konstantinos Amouris	1140-2	8798

7590 , 10/19/2004

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EXAMINER

DAVIS, CYNTHIA L

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,297

Applicant(s)

AMOURIS, KONSTANTINOS

Examiner

Cynthia L Davis

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Ac

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-12, and 14-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-12, and 14-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/29, 7/23</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: it depends from cancelled claim 2. Appropriate correction is required.
2. Claim 14 is objected to because of the following informalities: it depends from cancelled claim 13. Appropriate correction is required.
3. Claim 15 is objected to because of the following informalities: it depends from claim 14, which depends from cancelled claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-12, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia-Luna-Aceves in view of Sousa.

Regarding claim 1, a method for allocating a set of time slots belonging to a common TDMA channel to a network of transceiver nodes is disclosed in Garcia-Luna-Aceves. Dividing the set of time slots into a plurality of time slot sub-sets is disclosed in column 6, lines 56-57 and column 11, lines 33-43 (as ASL is the same as a slot sub-set). Allocating time slot sub-sets to each one of said transceiver nodes is disclosed in column 16, lines 56-58 (ASL's are allocated among nodes). Resolving time slot allocation conflicts occurring when at least two transceiver nodes of said network of

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transceiver nodes are allocated time slots belonging to an identical time slot sub-set and the distance between said at least two transceiver nodes is less than a predetermined threshold is disclosed in column 10, line 59-column 11, line 9, and column 14, lines 20-26 (a conflict among requested ASL's could occur when a node moves within the two-hop neighborhood, i.e., with in a predetermined distance that is related to the transmission range of the nodes, of a node in the network that it had previously been a three-hop neighbor of). Claim 1 further discloses that the time slot allocation is based on node position in space, which is identified periodically, which is missing from Garcia-Luna-Aceves. This is disclosed in Sousa, page 157, section 7.0 (disclosing the feasibility of allocating time resources based on position in a cell). It would have been obvious to one skilled in the art at the time of the invention to allocate time slots based on node position. The motivation would be reduce interference among nodes.

Regarding claim 12, a system for allocating a set of time slots belonging to a common TDMA channel to a network of transceiver nodes is disclosed in Garcia-Luna-Aceves. Means for dividing the set of time slots into a plurality of time slot stub-sets is disclosed in column 6, lines 56-57 and column 11, lines 33-43 (an ASL is the same as a slot sub-set). Means for allocating time slot sub-sets to each one of said transceiver nodes is disclosed in column 16, lines 56-58 (ASL's are allocated among nodes). Means for resolving time slot allocation conflicts occurring when at least two transceiver nodes of said network of transceiver nodes are allocated time slots belonging to an identical time slot sub-set and the distance between said at least two transceiver nodes is less than a predetermined threshold is disclosed in column 10, line 59-column 11, line

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9, and column 14, lines 20-26 (a conflict among requested ASL's could occur when a node moves within the two-hop neighborhood, i.e., within a predetermined distance that is related to the transmission range of the nodes, of a node in the network that it had previously been a three-hop neighbor of). Claim 1 further discloses that the time slot allocation is based on node position in space, which is identified periodically, which is missing from Garcia-Luna-Aceves. This is disclosed in Sousa, page 157, section 7.0 (disclosing the feasibility of allocating time resources based on position in a cell; if the resource allocation is based on position, there must be means for identifying the coordinates of the nodes). It would have been obvious to one skilled in the art at the time of the invention to allocate time slots based on node position. The motivation would be to reduce interference among nodes.

Regarding claims 3 and 13, resolving time slot allocation conflicts comprising allocating to each one of the two transceiver nodes time slots belonging to a different time slot sub-set is disclosed in Garcia-Luna-Aceves, column 16, lines 58-60.

Regarding claims 4 and 14, the periodically identified set of space coordinates corresponding to each transceiver node's current set of space coordinates is missing from Garcia-Luna-Aceves. However, Sousa discloses in page 157, section 7.0, the feasibility of allocating time resources based on a node's position in a cell. It would have been obvious in light of this disclosure to identify each transceiver node's current set of space coordinates. The motivation would be to allocate time resources based on position, thereby reducing interference among nodes.

Regarding claim 5, using the time slots belonging to the common TDMA channel for managing communication channel resources between a plurality of nodes of said network of transceiver nodes is disclosed in Garcia-Luna-Aceves, column 14, lines 48-61 (the nodes manage the resources by sending messages to each other on the common channels).

Regarding claim 6, each node of said plurality of nodes communicating on multiple channels on a time multiplex basis is disclosed in Garcia-Luna-Aceves, figure 1, and column 11, lines 33-43 (the time slots are on various channels).

Regarding claim 7, dividing each time slot of said set of time slots belonging to said common TDMA channel into a plurality of time sub-slots, and designating one time slot as a query time slot is disclosed in Garcia-Luna-Aceves, column 6, lines 55-59. Each source node of said plurality of nodes desiring to send data to a destination sub-set of each source node's respective set of neighboring nodes transmitting a query packet including the identifier of each node of said destination sub-set during the query time-slot is disclosed in column 12, lines 55-56.

Regarding claim 8, storing for each communicating node a transmit set of time slot and channel pairs which can be used by the communicating node is disclosed in Garcia-Luna-Aceves, column 12, lines 57-59 (if the node has this information to send out in the schedule packet, it must have it stored). Storing for each communicating node a receive set of time slot and channel pairs which can be used by said each communicating node to receive data from each communicating node's set of neighboring nodes is disclosed in column 13, lines 67 (an ISR is an idle slot range).

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Communicating a portion of the stored time slot and channel pair data between said each source node and said destination sub-set during the subsequent time sub-slots of said allocated time slot is disclosed in column 6, lines 55-59 (the exchange of scheduling packets communicates the stored information).

Regarding claim 9, the query packet further including a selected sub-set of said transmit set of time slot and channel pairs stored for each destination node is disclosed in Garcia-Luna-Aceves, column 12, lines 64-65 (the schedule priority ticket shows which time slot and channel pairs are in the selected sub-set. Higher priority ASL's would be selected).

Regarding claim 10, identifying by each destination node an assignment set of time slot and channel pairs belonging to both the selected sub-set of said transmit set of time slots and channel pairs included in the query control packet and the receive set of time slot and channel pairs stored for each destination node is disclosed in Garcia-Luna-Aceves, column 14, lines 60-61 (the node can request based on matchups between its desired ASL's and its neighbors' advertised ISR's). Sending by each destination node a response packet including said assignment set of time slot and channel pairs on which each destination node desired to receive data from said each source node, and receiving by each source node said response packet including said assignment set of data is disclosed in column 16, lines 56-58. Sending by each source node a confirmation packet including said assignment set of time slot and channel pairs which said each source node uses to transmit data to said each source node is

disclosed in column 16, lines 56-60 (the confirmation packet is the next scheduling packet, which has the request bit changed).

Regarding claim 11, each neighboring node of said each destination node receiving said response packet identifying in the transmit set of time slot and channel pairs stores for each neighboring node of said each destination node the time slot and channel pairs belonging to said assignment set of time slot and channel pairs is disclosed in Garcia-Luna-Aceves, column 14, lines 60-61 (the source node only requests based on matchups between its desired ASL's and its neighbors' advertised ISR's, so every request the neighboring nodes receive contains time slot and channel pairs that are in the assignment set). Each neighboring node of said each source node receiving said confirmation packet identifying in the receive set of time slot and channel pairs stored for said each neighboring node of said each source node the time slot and channel pairs belonging to said assignment set of time slot and channel pairs is disclosed in column 16, lines 56-60 (the confirmation packet is the next scheduling packet, which has the request bit changed. This will only happen for time slot and channel pairs that are in the assignment set).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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